

High Prevalence of Antimicrobial-resistant, Including Fluoroquinolone-Resistant *Campylobacter* on Chicken in US Grocery Stores

Rossiter S, Joyce K, Ray M, Benson J, Mackinson C, Gregg C, Sullivan M, Vought K, Leano F, Besser J, Marano N, Angulo F

Background: *Campylobacter* is the most common bacterial cause of diarrheal illness, causing an estimated 2.4 million infections each year in the United States. Most infections result from improper handling or cooking of chicken. Antimicrobial agents, particularly fluoroquinolones (e.g. ciprofloxacin) and macrolides (e.g. erythromycin), are commonly used empirically to reduce the duration of symptoms. Antimicrobial resistance is increasing, however, due to the use of fluoroquinolones and macrolides in chicken. We surveyed chickens purchased at grocery stores for the presence of antimicrobial-resistant *Campylobacter*.

Methods: In January-June 1999, laboratories in Georgia, Maryland, and Minnesota each tested 10 chickens a month. Carcass rinse samples were centrifuged and pellets were incubated in enrichment broth and plated onto *Campylobacter* blood agar plates and nalidixic acid screening plates. *Campylobacter* isolates were forwarded to CDC for species identification and antimicrobial susceptibility testing via Etest (AB BIODISK, Solna, Sweden) to azithromycin, chloramphenicol, ciprofloxacin, clindamycin, erythromycin, gentamicin, nalidixic acid, and tetracycline.

Results: We tested 180 chickens with 23 domestic brand names which were purchased from 25 grocery stores; 80 (44%) chickens yielded *Campylobacter*. Prevalence of *Campylobacter* was 20/60 (33%) in GA, 22/60 (37%) in MD, and 38/60 (63%) in MN. Among the 80 *Campylobacter* isolates tested, 4 (5%) were resistant to azithromycin, 1 (1.3%) to chloramphenicol, 19 (24%) to ciprofloxacin, 3 (3.8%) to clindamycin, 4 (5%) to erythromycin, 1 (1.3%) to gentamicin, 25 (32%) to nalidixic acid, and 52 (65%) to tetracycline. Although multi-drug resistance was common, with 19 (24%) resistant to >3 agents, only 2 (2.5%) were resistant to both ciprofloxacin and erythromycin. However, 19/180 (11%) of all chickens yielded ciprofloxacin-resistant *Campylobacter*.

Discussion: Chickens represent a major reservoir for *Campylobacter*, including fluoroquinolone-resistant and other antimicrobial-resistant *Campylobacter*, to which humans are routinely exposed. To mitigate the human health consequences of antimicrobial-resistant *Campylobacter* infections, antimicrobial agents should be used more prudently in chickens; fluoroquinolone use, in particular, should be restricted.

Suggested citation:

Rossiter S, Joyce K, Ray M, Benson J, Mackinson C, Gregg C, Sullivan M, Vought K, Leano F, Besser J, Marano N, Angulo F. High prevalence of antimicrobial-resistant, including fluoroquinolone-resistant *Campylobacter* on chicken in US grocery stores. American Society for Microbiology 100th General Meeting. Los Angeles CA, May 2000.